

WILDLIFE BIOLOGICAL EVALUATION

DUBAKELLA PLANTATIONS INSECT & DISEASE PROJECT

**South Fork Management Unit,
Shasta-Trinity National Forest**

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EXECUTIVE SUMMARY

This Biological Evaluation analyzes the effects of treatments proposed in the Dubakella Plantation Insect & Disease Project on designated Forest Service Sensitive wildlife species known or expected to occur on the Shasta-Trinity National Forest (Forest). Table 1 lists determinations for the wildlife species designated by the Regional Forester as sensitive species on the Forest. For the species with suitable habitat or known occurrence within or near the project area, the table also summarizes project design features/resource protection measures that reduce the potential impacts of proposed activities. The other species have distributions outside of the project area. The latter are not analyzed in detail because the project will have no direct, indirect, or cumulative effects on them. The project complies with the Forest's Land and Resource Management Plan (Forest Plan; USDA Forest Service 1995), the National Forest Management Act (NFMA; 16 U.S.C 1600-1614), and United States Department of Agriculture Forest Service Policy (FSM 2670.32) for documenting effects to sensitive species.

Table 1. Summary of effects to sensitive wildlife species

Species	Effects Determination ¹	Project Design Features/Resource Protection Measures
Northern goshawk	No trend toward federal listing	LOP ² for units within 0.5 miles of known goshawk nest sites; NSO LOPs.
Yellow rail	No effect. Outside of range	N/A
Willow flycatcher	No effect.	Protect riparian habitats; NSO LOPs.
Bald eagle	No trend toward federal listing	Protect riparian habitats; LOP for units within 0.5 miles of known bald eagle nest sites (none); NSO LOPs.
Pallid bat	No trend toward federal listing	NSO LOPs. No project activities will take place within 250 feet of caves or mines. Large snags and legacy trees will be retained.
Townsend's big-eared bat	No effect.	NSO LOPs. No project activities will take place within 250 feet of caves or mines.
Fringed myotis	No trend toward federal listing	NSO LOPs. No project activities will take place within 250 feet of caves or mines. Large snags and legacy trees will be retained.
North American wolverine	No effect. Outside of range	N/A
Pacific marten	No trend toward federal listing	Protect riparian habitats; NSO LOPs. Large snags, legacy trees, and coarse wood (logs) will be retained. Dominant and codominant hardwoods will be retained. NSO nesting/roosting habitat will be retained.
Fisher	May impact individuals but will	Protect riparian habitats; NSO LOPs.

¹ No trend toward federal listing: The project may impact individuals, but is not likely to result in a trend towards Federal listing or loss of population viability within the Shasta-Trinity National Forest. This determination is based on local knowledge of each species, habitat conditions within the project area, species status, and professional judgment.

² LOP= Limited operating period.

Species	Effects Determination ¹	Project Design Features/Resource Protection Measures
	not jeopardize the continued existence of this species.	Large snags, legacy trees, and coarse wood (logs) will be retained. Dominant and codominant hardwoods will be retained. NSO nesting/roosting habitat will be retained.
Western pond turtle	No trend toward federal listing	Protect riparian habitats; NSO LOPs.
Shasta salamander	No effect. Outside of range	N/A
Northern red-legged frog	No effect. Outside of range	N/A
Foothill yellow-legged frog	No trend toward federal listing	Protect riparian habitats; NSO LOPs.
Cascades frog	No effect. Outside of range	N/A
Southern torrent salamander	No effect. Outside of range	N/A
Western bumble bee	No trend toward federal listing	Protect riparian habitats; NSO LOPs.
Shasta sideband snail	No effect. Outside of range	N/A
Wintu sideband snail	No effect. Outside of range	N/A
Shasta chaparral snail	No effect. Outside of range	N/A
Tehama chaparral snail	No effect. Outside of range	N/A
Big Bar hesperian snail	No effect. Outside of range	N/A
Shasta hesperian snail	No effect. Outside of range	N/A
California floater (freshwater mussel)	No effect. Outside of range	N/A
Nugget pebblesnail	No effect. Outside of range	N/A
Black juga (snail)	No effect. Outside of range	N/A
Scalloped juga (snail)	No effect. Outside of range	N/A
Kneecap lanx (limpet)	No effect. Outside of range	N/A
Montane peaclam	No effect. Outside of range	N/A

CURRENT MANAGEMENT DIRECTION

A biological evaluation (BE) analyzes potential effects of a federal action on species identified as “sensitive” by the USDA Forest Service. The Forest Service defines sensitive species as those plant and animal species identified by the Regional Forester for which population viability is a concern, as evidenced by current or predicted negative trends in population numbers or viability, or current or predicted negative trends in habitat capability that would reduce a species’ distribution (Forest Service Manual 2670.5). The primary concern is at the population level, and the BE determines if agency actions are likely to lead to a trend toward Federal listing under the Endangered Species Act. Sensitive species are managed under the authority of the National Forest Management Act (PL 94-588) and USDA Forest Service Manual (FSM) Direction.

This BE describes potential effects of the Dubakella Plantations Insect & Disease Project (Project) on those wildlife species on the Regional Sensitive Species List for this Forest (USDA Forest Service 2013). This list was most recently amended on September 9, 2013. A separate biological assessment (BA) addresses potential effects of this project on federally listed species, including the northern spotted owl (NSO).

PROPOSED ACTION

For a detailed description of all project activities, please see the Decision Memo. Potential effects of the Proposed Action are addressed here in the analyses for each individual species. There are no Alternatives. Under the No Action Alternative, no areas would be treated.

METHODOLOGY

General

Key considerations for the analysis of potential project impacts include the presence of a species or suitable habitat in or near the project area; the scope and nature of activities associated with action alternatives; and the potential for project actions to affect habitat suitability, habitat use, or species behavior. This BE assesses the potential for direct and indirect effects to breeding, feeding, and sheltering activities as well as potential effects to habitat suitability and population viability. Direct effects are those that result in physical harm or death to individuals, or the disruption of reproduction or other key behaviors. Indirect effects include impacts to suitable habitat and effects that occur later in time such as a shift in prey base used by a species, invasion by other species as a result of the project, or other changes to essential habitat characteristics.

The degree to which treatments may impact individuals and/or habitats is assessed in terms of three general indicators: magnitude, duration, and intensity. Anticipated short- and long-term direct and indirect effects of alternatives are evaluated using the following indicators:

- Amount and quality of suitable habitat (nesting, foraging, resting/denning, roost sites, and connectivity) maintained, degraded, downgraded, removed, or improved.
- Potential for direct disturbance to individuals as they forage, breed, or disperse.

The magnitude, duration, and intensity of impacts of project activities are assessed using the following measures:

- Proximity of treatments to known territories and/or nesting, denning, resting, or roosting habitat, and the duration and intensity of treatments.
- Potential changes in habitat suitability for each sensitive species due to project activities.

Wildlife data used in this BE originate from species and habitat surveys; Forest and State wildlife records and databases, primarily the Natural Resource Information System (NRIS) database managed by the US Forest Service and the California Natural Diversity databases (CNDDB) managed by the California Department of Fish and Wildlife; literature reviews; assessments of current conditions; personal communications with other Forest Service personnel; and personal knowledge based on local wildlife experience.

Analysis Boundaries

To encompass potentially affected individuals of all Forest Service Region 5 Sensitive species, this analysis is bounded in space to include any area within 1.3 miles of treatment areas. This area is appropriate because it considers home range sizes of all Forest Service Sensitive species considered in this analysis, and includes all areas of treatment plus a surrounding area adequate to assess potential effects to these species.

AFFECTED ENVIRONMENT

Vegetation in the project area is highly varied. The plantations proposed for treatment originated between 1957-1995 and are currently overstocked, containing 100-1,200 or more trees per acre and high levels of surface and ladder fuels. They are experiencing increased mortality due to competition, lack of water and resources for all trees, and decreased ability of trees to survive drought, insects and disease. The plantations are lacking suitable wildlife habitat (including NSO nesting/roosting, foraging or dispersal habitat) due to their young age, relatively small diameter trees and high tree densities that NSO and other raptors could not fly through. Many of the plantations are also dominated by ponderosa pine and/or contain a high density of understory trees and shrubs. Outside of the plantations, forest types/conditions range drastically from areas that are dominated by brush and/or ponderosa pine with relatively open canopies to areas containing mature mixed-conifer forest with high canopy cover and large trees (dominated by Douglas fir, but also containing ponderosa pine, sugar pine, white fir, incense cedar, madrone, big-leaf maple, live oak, black oak, and occasional Pacific yew in riparian corridors). In many areas, the natural stands adjacent to the plantations are also experiencing areas of mortality from insects and disease.

The units proposed for broadcast burning outside of plantations, as well as the stands surrounding these units, contain some suitable wildlife habitat. This area consists of mature mixed-conifer forest with high canopy cover (60%+) and large trees. It is dominated by Douglas fir, but also contains ponderosa pine, sugar pine, white fir, incense cedar, madrone, big-leaf maple, live oak, black oak, and occasional Pacific yew in riparian corridors.

ENVIRONMENTAL CONSEQUENCES

Northern goshawk (*Accipiter gentilis*)

Species Account

The northern goshawk is a widely distributed predator inhabiting boreal and temperate forests throughout the northern hemisphere (Shuford and Garaldi 2008). In North America it breeds throughout Alaska and Canada, and the mountains of the eastern and western US (Squires and Kennedy 2006). Northern goshawks primarily occupy mid- and high-elevation ponderosa pine, mixed-species, and spruce-fir forests, often with little understory vegetation, on flat or moderately sloping terrain. Although they nest in a variety of habitat types, goshawks prefer even-aged mature forests with large trees and open understories. Nest sites tend to be in large trees associated with water and riparian corridors (Squires and Reynolds 1997, Squires and Kennedy 2006, Zeiner *et al.* 1990). Saunders (1982, in USDI Fish and Wildlife Service 1998) found mean diameter of nest trees on the Shasta-Trinity National Forest was 29 inches.

Northern goshawks forage in an array of habitats, preying primarily on birds and small mammals (Squires and Reynolds 1997; Reynolds *et al.* 1992). Foraging habitats typically contain abundant large snags and logs for prey habitat and plucking posts (Squires and Reynolds 1997). In the southern Cascades, goshawks prefer to forage in mature and older stands with canopy closure greater than 40 percent. However, early-successional patches and openings also provide foraging opportunities. Reynolds *et al.* (1992) determined that small and medium sized openings (less than four acres) likely enhance prey availability, whereas larger openings are less favorable for most goshawk prey species. Important prey for goshawks in California include squirrels (chipmunks, Douglas, golden-mantled ground, gray, northern flying), Steller's jays, grouse (ruffed and blue), and northern flickers. Squirrels occur in most goshawk diets due to their high abundance and broad distribution (USDI Fish and Wildlife Service 1998). Accounts of home range sizes in the scientific literature for this species vary widely, but an analysis area 1.3 miles around proposed treatments is likely to encompass the typical home range of goshawks in this region based on data in the literature cited above for this species.

Forested conditions suitable for nesting are not present within the plantations but habitat is present in portions of the proposed burn blocks outside of plantations. Goshawk sightings have been recorded in the action area (none in any proposed units) and 11 nests have been recorded within 0.5 miles of plantation units (none are within 0.5 miles of the burn blocks outside plantations). These 11 nests are associated to just two NOGO territories- Hall City Caves and Landis Gulch. In keeping with Forest Plan requirements, these sites will be protected from disturbance during the goshawk breeding season using the LOP described in the project RPMs and below.

Direct and Indirect Effects

Project activities may cause intermittent disturbance to goshawks near treatment areas, and individual goshawks may move away from treatment areas temporarily during project implementation due to the presence of humans and equipment. A Limited Operating Period (LOP) has been incorporated into the project design to avoid disturbance to NSO during their breeding season. This will apply to activities manipulating NSO habitat or producing loud and

continuous noise or smoke that could potentially disturb spotted owls. As a result, disturbance to breeding northern goshawks is likely to be minimal as their breeding seasons overlap. Potential habitat alteration is limited to low to moderate intensity underburning outside of plantations and the project has been designed to maintain habitat functionality. All snags and legacy trees $\geq 15''$ DBH will be retained unless they are a safety hazard. Any snags/trees felled for safety reasons would be left on site as logs. Coarse wood (logs greater than 20 inches diameter and 10 feet long) that is already on the ground will be retained where feasible.

The STNF Forest Plan requires protection of known goshawk nest sites (Forest Plan page 3-27). To this end, an LOP will be imposed from February 1 to August 15 within 0.5 miles of the known goshawk nest sites in the project area to avoid potential disturbance at these sites during the goshawk breeding season.

In summary, potential effects to goshawks are very limited.

Determination

It is my determination that the proposed action may affect individual northern goshawks, but potential effects to the reproduction and population demography of this species are limited and insignificant, and will not cause a trend toward listing.

Willow flycatcher (*Empidonax traillii*)

Species Account

Willow flycatchers breed from Maine to British Columbia, and south through California and southern Arizona (Sedgwick 2000, Craig and Williams 1998, Timossi *et al.* 1995). Sedgwick (2000) quoted Grinnell and Miller (1944) as concluding that in California this species is “strikingly restricted to thickets of willows, whether along streams in broad valleys, in canyon bottoms, around mountain-side seepages, or at the margins of ponds and lakes.” Today this species is absent from most of California, with currently known breeding locations restricted primarily to the Sierra Nevada/Cascade region (southeast Shasta County south to north Kern County, including Alpine, Inyo, and Mono Counties), and Santa Barbara, Riverside, and San Diego Counties (Sedgwick 2000).

Breeding habitat is typically moist meadows with perennial streams, lowland riparian woodlands dominated by cottonwood and willows (primarily in tree form), or smaller spring-fed or boggy areas with willows or other wetland plants. Deciduous riparian shrubs or trees are essential elements in willow flycatcher territories. Complex (multi-story) canopies and openings are also important components of nesting habitat (Craig and Williams 1998; Sedgwick 2000). Willow flycatchers generally do not occupy areas with dense tree cover, although they will use scattered trees for singing and foraging perches. Their diet consists almost exclusively of flying insects (Craig and Williams 1998). The nearest recorded observation is approximately 16 miles to the northwest of the proposed treatment areas. Willow thickets and true riparian vegetation is lacking from the project units.

Direct and Indirect Effects

Willow flycatchers are not known or expected to occur within project units due to lack of dense willows and riparian vegetation sufficient to support this species. An LOP has been incorporated into the project design to avoid disturbance/harm to NSO during their breeding season. This will

apply to activities manipulating NSO habitat or producing loud and continuous noise or smoke that could potentially disturb NSO. Disturbance to willow flycatchers potentially breeding near the project area is not expected to occur and there will be no willow flycatcher habitat alteration. Extensive resource protection measures for riparian zones, including protection of riparian plant species, will further prevent potential effects to this species.

In summary, there will be no effect to willow flycatchers.

Determination

It is my determination that the proposed action will have no effect on willow flycatchers.

Bald eagle (*Haliaeetus leucocephalus*)

Species Account

Bald eagles typically utilize large trees protected from disturbance for nesting, and late successional and old growth forests close to large rivers or lakes for winter roosting sites. Their primary food source is fish, which are taken live or as carrion (USDI Fish and Wildlife Service 2013; Anthony *et al.* 1992; USDI Fish and Wildlife Service 1986). Average home range sizes in Oregon and Washington, respectively, were 1,650 and 1,216 acres (Snyder 1993, Kalasz and Buchanan 2016). On the Shasta-Trinity National Forest, many large conifers provide potential nest sites on slopes overlooking Trinity Lake, Lewiston Lake, the Trinity River, and South Fork Trinity River. Other nests are located near major tributaries.

Conditions suitable for nesting, roosting or foraging by bald eagles are not present within the plantations. Limited habitat may be present in portions of the proposed burn blocks outside of plantations; however bald eagles are not expected to utilize the burn blocks due to the lack of fish-bearing large waterbodies nearby. The only potentially suitable foraging/nesting habitat within the Action Area is along Hayfork Creek. No bald eagles or nests have been recorded in or near the proposed treatment units and the nearest observation is approximately 4 miles to the SW, along the South Fork Trinity River.

Direct and Indirect Effects

Although bald eagles have habituated to large urban areas and reproduce successfully in these settings, bald eagles in other locations may be more sensitive to human disturbance (USDI Fish and Wildlife Service 2013). If bald eagles forage in or near treatment areas, they may be exposed to intermittent noise from project activities. If so, eagles with lower thresholds of sensitivity may move away from treatment areas temporarily during project implementation. While intermittent disturbance may cause some shifting of foraging or resting behavior, it is highly unlikely to lead to disturbances in breeding success for this species.

An LOP has been incorporated into the project design to avoid disturbance to NSO during their breeding season. This will apply to activities manipulating habitat or producing loud and continuous noise or smoke that will potentially disturb NSO. These protection measures will also decrease potential disturbance and direct effects to bald eagles during their breeding season.

The STNF Forest Plan requires protection of known bald eagle nest sites (Forest Plan page 3-27). To this end, an LOP will be imposed from February 1 to August 15 within 0.5 miles of any known bald eagle nest sites in the project area to avoid potential disturbance at these sites during

the bald eagle breeding season. However, there are no known bald eagle nest sites within 0.5 miles (or within 1.3 miles) of the project units.

In summary, potential effects to bald eagles are very limited, and no impacts to potential nesting or roosting trees would occur.

Determination

It is my determination that the proposed action may affect individual bald eagles, but potential effects to the population demography of this species are very limited, and are not likely to cause a trend toward listing.

Pallid bat (*Antrozous pallidus*)

Species Account

The pallid bat has a wide distribution throughout the western United States, and can be abundant in many arid, low elevation regions (Sherwin and Rambaldini 2005; California Department of Fish and Game 2008a). They occur throughout California except in the high elevation Sierra Nevada from Shasta to Kern counties, and the northwestern corner of the state from Del Norte and western Siskiyou Counties to northern Mendocino County (California Department of Fish and Game 2008b). Summer roost sites are in cavities in live trees or snags, deep crevices in rock faces, caves, mines and bridges, and occasionally in open buildings (Baker *et al.* 2008). This species feeds primarily on the ground, commonly preying on crickets, grasshoppers, beetles and scorpions. They generally forage in open areas with limited ground cover (Rambaldini and Brigham 2011).

Keinath (2003) found that for insectivorous bats “the concept of home range is not clearly applicable to bat ecology, given the mobility of bats and the apparent plasticity of foraging areas with respect to prey abundance.” The analysis area used in this report for northern goshawks and pacific fishers (1.3 mi. around proposed treatments), both larger and very mobile species, will be used here to conservatively estimate an appropriate scale on which to assess potential effects to this species. This area is appropriate because it is large enough to consider the short distances that bats likely typically travel between roost, hibernation and foraging sites on a regular basis.

Wildlife databases show no observations of pallid bats within treatment units, however there are 2 observation points in the analysis area. The nearest recorded observation is approximately 0.2 miles from a proposed plantation. Some habitats in the project area may be suitable for this species.

Direct and Indirect Effects

Pallid bats may use large trees, snags, bridges, caves, or mines in or near the project area. No project activities will occur within 250 feet of caves or mines and no bridges would be impacted. Resource protection measures for the project include retention of existing legacy trees and snags greater than 15 inches DBH unless they are a safety hazard. Snags with deformities such as cat faces, broken or forked tops, hollows or cavities will be prioritized for retention. The felling of hazardous snags may disturb individual pallid bats. However, trees and snags do not have the structure suitable for protecting maternity colonies, so late season disturbance of these structures

may result in temporary displacement of bats to alternative day roost sites, but is unlikely to impact breeding individuals.

Project activities may cause intermittent disturbance to pallid bats near treatment areas, and individual pallid bats may move away from treatment areas temporarily during project implementation due to the presence of humans and equipment. This may increase exposure to predation, but any increase in predation resulting from these activities is likely to be limited and short in duration.

Although direct harm could potentially result from felling hazardous snags, the potential extent of direct effects is very limited due to the limited number of snags that would be felled (only snags hazardous to prescribed fire control lines or personnel/operations will be felled and they will be left on site as logs). Their preferred roosting sites such as caves, mines and bridges will not be impacted, which greatly reduces the potential for direct effects to this species. The LOP incorporated into the project design to avoid disturbance to NSO during their breeding season will further reduce potential direct effects as well as noise/smoke disturbance to pallid bats during their breeding season. Potential habitat alteration is limited to felling hazardous snags. As a result, indirect effects to pallid bats will be very minor.

In summary, potential effects to pallid bats are very limited.

Determination

It is my determination that the proposed action may affect individual pallid bats, but potential effects to the population demography of this species are limited and insignificant, and will not cause a trend toward listing.

Townsend's big-eared bat (*Corynorhinus townsendii*)

Species Account

This species occurs in the western and southeastern United States and in southern British Columbia, with isolated populations on the Southern Plains and southward to Mexico. It is found throughout California from low desert to mid elevation montane habitats and is most abundant in mesic habitats (Zeiner *et al.* 1990). It occupies a variety of habitats ranging from coniferous forests and woodlands to deciduous riparian woodlands, semi-desert and montane shrub habitats. Townsend's big-eared bats are strongly correlated with the availability of caves and cave-like roosting habitat, although they occasionally make use of man-made structures such as abandoned buildings and bridges (USDA Forest Service 1998; Zeiner *et al.* 1990). Townsend's big-eared bats are very sensitive to disturbance at roost sites, and may abandon sites following a single disturbance (Zeiner *et al.* 1990). This species feeds primarily on small moths. It prefers foraging along edges of riparian vegetation where conifers and deciduous riparian species support lepidopteran prey species, and tends to avoid foraging in open areas (Fellers and Pierson 2002, Gruver and Keinath 2006). For the reasons listed above in the pallid bat analysis, the analysis area for this species is all lands within 1.3 miles of the proposed treatments.

Wildlife databases show no observations of Townsend's big-eared bats in or near the project area. The nearest recorded observation is approximately 5 miles to the NW.

Direct and Indirect Effects

Townsend's big-eared bats may use caves, mines or bridges in or near the project area. No project activities will occur within 250 feet of caves or mines and no bridges would be impacted. The nearest cave/mine is approximately 0.4 miles from proposed plantations however this species has not been observed there. Project implementation would not impact any reproductive sites and there would be no habitat alteration. The LOP incorporated into the project design to avoid disturbance to NSO during their breeding season will reduce potential direct effects as well as noise/smoke disturbance to Townsend's big-eared bats during their breeding season. As a result, direct and indirect effects to Townsend's big-eared bats will not occur.

In summary, potential effects to Townsend's big-eared bats are not expected.

Determination

It is my determination that the proposed action will not affect Townsend's big-eared bats.

Fringed myotis (*Myotis thysanodes*)

Species Account

The fringed myotis is a predominantly western bat species occurring from southern British Columbia south through southern Mexico, with an isolated population in the Black Hills of South Dakota and Wyoming. They are generally found between 3,000 and 5,000 feet in elevation, but also inhabit lower elevations near coastal areas. This species is rare in California, but is found throughout the state, from the coast to 5,900 feet or greater in elevation in the Sierra Nevadas (Keinath 2003). They occur within a broad range of vegetative types but are mostly reported to occur in pinyon juniper, oak, ponderosa pine and mixed conifer forest types (Keinath 2004).

This species often forages along small streams (Pierson *et al.* 2001). Fringed myotis bats living in temperate forests must drink water shortly after emerging from their day roosts each evening, and may require up to half their body weight in water each day depending on the type of prey consumed (Christy and West 1993; Keinath 2004). Consequently, they are generally found to roost in areas within close proximity to a water source, though the size and extent of that source can be highly variable. The limited information available on its diet indicates they consume primarily beetles, supplemented by moths and fly larvae captured in the air or on foliage (Keinath 2004). Fringed myotis are morphologically adapted to forage in areas of relatively high vegetative diversity such as interior forests and/or their edges, but not in wide openings such as clear-cuts or meadows where their chief prey taxa (coleopterans) would be less abundant (Pierson *et al.* 2001).

Fringed myotis will use caves, mines, and buildings as solitary day/night roosts and hibernacula. They may also use bridges and rock crevices as solitary day/night roosts (Christy and West 1993). Weller and Zabel (2001) found that many day and night roosts in northern California were under tree bark and in tree hollows, and medium to large diameter snags provided important day and night roosting sites for this species. However, Lacki and Baker (2007) found that fringed myotis in Oregon and Washington use trees/snags as roosts much less than previously reported and instead favored caves, mines, and buildings as solitary day and night roosts and hibernacula. Roosts in more permanent structures such as bridges and rock crevices elicit high roost fidelity compared to more temporary roosts such as trees and snags (Lewis 1995, Weller and Zabel 2001). Maternity colonies have been documented in caves, mines, abandoned buildings, bridges, and

rock crevices, and can range in size from a few dozen bats to several hundred (Keinath 2004, Keinath 2003). Like many cave roosting species, fringed myotis colonies are susceptible to disturbance in hibernacula and maternal colonies. Few hibernacula have been well documented, but those that have are generally cool and usually in caves or mines with little temperature fluctuation throughout the winter (Keinath 2004, Keinath 2003). For the reasons listed above in the pallid bat analysis, the analysis area for this species is all lands within 1.3 miles of proposed treatments.

Wildlife databases show no observations of fringed myotis bats within treatment units, however there are 2 observation points in the analysis area. The nearest recorded observation is approximately 0.4 miles from a proposed plantation. Some habitats in the project area may be suitable for this species.

Direct and Indirect Effects

Fringed myotis bats may use large trees, snags, bridges, buildings, caves, or mines in or near the project area. No project activities will occur within 250 feet of caves or mines and no bridges or buildings would be impacted. Resource protection measures for the project include retention of existing legacy trees and snags greater than 15 inches DBH unless they are a safety hazard. Snags with deformities such as cat faces, broken or forked tops, hollows or cavities will be prioritized for retention. The felling of hazardous snags may disturb individual fringed myotis bats. However, trees/snags do not have the structure suitable for protecting maternity colonies, so late season disturbance of these structures may result in temporary displacement of bats to alternative day roost sites, but is unlikely to impact breeding individuals.

Project activities may cause intermittent disturbance to fringed myotis bats near treatment areas, and individual bats may move away from treatment areas temporarily during project implementation due to the presence of humans and equipment. This may increase exposure to predation, but any increase in predation resulting from these activities is likely to be limited and short in duration.

Although direct harm could potentially result from felling hazardous snags, the potential extent of direct effects is very limited due to the limited number of snags that would be felled (only snags hazardous to prescribed fire control lines or personnel/operations will be felled and they will be left on site as logs). Their preferred roosting sites such as caves, mines and bridges will not be impacted, which greatly reduces the potential for direct effects to this species. The LOP incorporated into the project design to avoid disturbance to NSO during their breeding season will further reduce potential direct effects as well as noise/smoke disturbance to fringed myotis bats during their breeding season. Fringed myotis tend to move to lower and more southerly hibernacula in the fall months (Keinath 2003) and may leave the project area entirely by the time these areas are treated. Potential habitat alteration is limited to felling hazardous snags. As a result, indirect effects to fringed myotis bats will be very minor.

In summary, potential effects to fringed myotis bats are limited.

Determination

It is my determination that the proposed action and alternatives may affect individual fringed myotis bats, but potential effects to the population demography of this species are limited and insignificant, and will not cause a trend toward listing.

Wolverine (*Gulo gulo luscus*)

Species Account

Wolverines primarily occupy coniferous forests, although they will also use alpine habitats (Banci 1994). In north coastal California, wolverines were historically observed in Douglas-fir and mixed conifer forest, but likely also used red fir, lodgepole, wet meadow, and montane riparian habitats. They are large opportunistic feeders that primarily scavenge carrion, but will also eat fruit, insects, and small animals (USDI Fish and Wildlife Service 2003). Wolverine home ranges are generally quite large, and the availability and distribution of food is considered a primary factor limiting wolverine movements and home range. Wolverines seem to prefer areas without human disturbance, especially when denning from late winter through early spring (USDI Fish and Wildlife Service 2003).

In California, wolverines historically occurred throughout the Sierra Nevada, Cascade, Klamath, and northern Coast ranges in alpine, boreal forest and mixed forest vegetation types (Schempf and White 1977). Zeiner *et al.* (1990) noted the wolverine is a scarce resident of North Coast mountains and the Sierra Nevada. Sightings have ranged from Del Norte and Trinity Counties, east through Siskiyou and Shasta counties in the Coast Range, and south through Tulare County. Most reported sightings in this region range from 1,600 to 4,800 feet in elevation, according to California Department of Fish and game records from 2005.

There have been no confirmed wolverine sightings on the Forest over the past 20 years. Surveys conducted in California over that time span using remote cameras and track plate surveys, including survey sites on the Shasta-Trinity National Forest, have resulted in only one confirmed observation site in the state, on the Tahoe National Forest, and there are no known breeding populations of wolverines anywhere in California (USDI Fish and Wildlife Service 2016).

Determination

The project is outside the known range of this species and wolverines are not expected to occur. There will be no direct or indirect effects to wolverines. Therefore, it is my determination that the proposed action will have no effect on wolverines.

Pacific/American marten (*Martes caurina*, aka *M. americana*)

Species Account

Martens are closely associated with late-successional conifer forests with closed canopies and abundant, complex physical structure at or near the ground. They tend to use higher elevation forest above 4,500 feet and multi-storied mature and old growth conifers (white fir/red fir). Abundant slash, rotten logs, and stumps that provide cover and den sites are preferred habitat (Buskirk and Zielinski 1997; Krohn *et al.* 1997; Small *et al.* 2003). Abundant downed woody material also provides protection from predators, access to the subnivean (under snow) environment for hunting and resting, and thermal protection from heat and cold (Ruggiero *et al.* 1994). Lower branches of live trees, tree boles of all age/decay classes, coarse woody debris, shrubs and rock fields/talus slopes and caves can all contribute to structural requirements (Buskirk and Zielinski 1997). Late-successional habitat provides marten with rest and den sites

they require, as well as higher density of preferred prey species (Kirk 2007). Martens eat primarily small mammals, lagomorphs, and birds, but also take insects, fruit, and carrion opportunistically (Powell *et al.* 2003). Accounts of home range sizes in the scientific literature for this species vary widely (Stone 2010). Home ranges in the Sierra Nevada Mountains in largely unlogged forest landscapes averaged 1.2–1.9 mi² for males and 1.2–1.5 mi² for females, and similar home range estimates were reported in coastal areas of California and Oregon (USDI Fish and Wildlife Service 2015).

Our records show no detections of American martens in or near the project area. The nearest recorded observation is approximately 26 miles to the north. The majority of the project is lower than 4,500 feet elevation; however, the project area may include some habitat suitable for this species in the higher-elevation areas.

Direct and Indirect Effects

If martens do use the higher elevations in the project area, project activities may cause intermittent disturbance to martens near treatment areas, and individual martens may move away from treatment areas temporarily during project implementation due to the presence of humans and equipment. Intermittent disturbance may cause some shifting of foraging or resting behavior, but it is unlikely to be sufficiently adverse to lead to disturbances in breeding behavior for this species. An LOP has been incorporated into the project design to avoid disturbance to NSO during their breeding season. This will apply to activities manipulating NSO habitat or producing loud and continuous noise or smoke that would potentially disturb NSO. These protection measures will also decrease potential direct effects to martens during their denning season.

The plantations do not contain suitable marten habitat therefore potential habitat and habitat alteration is limited to the burn blocks outside of plantations. However, the burn blocks are below 4,500 feet elevation therefore marten are not likely to occur. Low to moderate intensity underburning would occur in the burn blocks but the project has been designed to maintain habitat functionality. All snags and legacy trees ≥ 15 " DBH will be retained unless they are a safety hazard. Any snags/trees felled for safety reasons would be left on site as logs. Coarse wood (logs greater than 20 inches diameter and 10 feet long) that is already on the ground will be retained where feasible. Additional Resource Protection Measures (RPMs) and Project Design Features (PDFs) are included in Appendix 1.

In summary, potential effects to martens are very limited.

Determination

It is my determination that the proposed action may affect individual Pacific martens, but potential effects to the population demography of this species are very limited and insignificant, and will not cause a trend toward listing.

Fisher (*Pekania pennanti*)

Species Account

Fishers in western North America are often associated with complex vertical and horizontal structural elements typical of late-successional forests, including large trees, snags, logs, and dense canopy (Raley *et al.* 2012). Contrary to earlier conclusions based on limited work, they are

not dependent upon old-growth conifer forests for survival, although such conditions can provide high-quality habitats (Raley *et al.* 2012). At a landscape scale, fisher typically occupy a mosaic of forest types and seral stages, generally with high proportions of mid- and late-seral forest and low proportions of open or non-forested habitats. They appear to be obligate cavity users for reproduction, relying on cavities to moderate temperature extremes and provide security for kits from potential predators. Fishers are relatively large and opportunistic predators. They forage primarily on small mammals, lagomorphs, and birds, but will also eat insects, fruit, carrion, and other items (Powell *et al.* 2003). There are numerous Pacific fisher observations in the analysis area.

Accounts of home range sizes in the scientific literature for this species are highly variable (USDI Fish and Wildlife Service 2014). Zielinski *et al.* (2004) found average home range size for female fishers in northern California of 980.5 ha (2,422 ac), while males ranged over larger areas (9,722 ac). As a result, home ranges in the project area are likely to be small compared to those reported in some other parts of this species' range. The analysis area for this report consists of all lands within 1.3 miles of the proposed treatment units. This bounding is appropriate because it is likely to encompass the typical home range of reproducing female fishers in this area.

The fisher (West Coast Distinct Population Segment (DPS)) is currently a Proposed Threatened species under the Endangered Species Act (ESA) as of September 21, 2018. There is no proposed critical habitat for this species at this time. A final listing decision date is unknown at this time, and the analysis in this BE addresses the project impacts to individuals in the project area, and its viability at the Forest scale. The fisher is not analyzed in the project Biological Assessment.

Direct and Indirect Effects

Project activities may cause intermittent disturbance to fishers within or near treatment areas, and individual fishers may move away from treatment areas temporarily during project implementation due to the presence of humans and equipment. Intermittent disturbance may cause some shifting of foraging or resting behavior, but it is unlikely to be sufficiently adverse to lead to disturbances in breeding behavior for this species. The NSO LOPs that have been incorporated into the project design to avoid disturbance to NSO during their breeding season will greatly reduce potential disturbance to fishers during their breeding season. These LOPs will apply to activities manipulating NSO habitat or producing loud and continuous noise or smoke that would potentially disturb NSO. These protection measures will also decrease potential direct effects to Pacific fishers during their denning season.

The plantations do not contain suitable fisher habitat therefore potential habitat and habitat alteration is limited to the burn blocks outside of plantations. Low to moderate intensity underburning would occur in the burn blocks but the project has been designed to maintain habitat functionality. Canopy closure will not be reduced below 60-70% in NSO nesting/roosting habitat or below 40% in foraging habitat. NSO nesting/roosting and foraging habitat is considered fisher habitat. All snags and legacy trees ≥ 15 " DBH will be retained unless they are a safety hazard. Any snags/trees felled for safety reasons would be left on site as logs. Coarse wood (logs greater than 20 inches diameter and 10 feet long) that is already on the ground will be retained where feasible. Overall, broadcast burning is expected to maintain current habitat and have long-term benefits (increased resiliency to future wildfires, insects and disease).

If an active fisher den site is found within a project unit or within 0.25 miles of a project unit, appropriate measures, such as seasonal restrictions, will be applied in cooperation with USFWS.

Additional Resource Protection Measures (RPMs) and Project Design Features (PDFs) are included in Appendix 1.

In summary, potential effects to fishers are very limited.

Determination

It is my determination that the proposed action may affect individual fishers, but potential effects to the population demography of this species are limited and insignificant. The proposed action will not jeopardize the continued existence of this species.

Western pond turtle (*Emys marmorata*, aka *Clemmys/Actinemys marmorata*)

Species Account

The range of the western pond turtle extends from northwestern Baja California, Mexico, north to the Puget Sound in Washington. It is generally restricted to areas west of the Sierra Nevada and Cascade Mountains (Rosenberg *et al.* 2009). Western pond turtles occur in a variety of habitat types associated with permanent or nearly permanent water. They concentrate in ponds and low flow regions of rivers and creeks such as side channels and backwater areas, and prefer creeks that have deep, still water and sunny banks. Basking sites such as rocks and floating or partially submerged logs are important habitat components. Western pond turtles are omnivorous, but their diet typically consists primarily of insects, crayfish, carrion, and other aquatic invertebrates (Jennings and Hayes 1994, Holland 1994, Wilson *et al.* 1991).

During the spring or summer females may travel away from ponds to find sites suitable for nesting, although the travel distance to most nest sites is less than 300 meters (984 feet). Dry grassy areas are often used as nest sites. Young emerge the following spring (March-April) and travel from nest sites to watercourses (Jennings and Hayes 1994, Holland 1994). In warm climates they may be active year-round, but in colder areas they hibernate during winter in muddy bottoms or upland areas, including forests. Upland hibernation sites were up to 500 meters (1,640 ft.) from aquatic habitats (Jennings and Hayes 1994, Reese and Welsh 1998).

Characteristics of suitable habitat cited in the scientific literature cited above were combined with spatial data in Forest databases to assess potentially suitable aquatic habitats within the proposed treatment areas. The analysis area for this species extends out 1,640 ft. from aquatic areas within treatment zones. This is appropriate because it encompasses the aquatic habitats potentially suitable for this species plus its potential nesting and upland hibernation sites.

On the Shasta-Trinity National Forest, pond turtles are known to occur in Trinity Lake, Lewiston Lake, the Trinity River, South Fork Trinity River, Hayfork Creek, some other tributaries as well as numerous ponds/lakes. Wildlife databases show no observations of pond turtles within treatment units, however there are several observations in the analysis area. The nearest recorded observations are at Hell to Find Lake, approximately 930 feet from treatment units, and at Boy Scout Pond, approximately 1,500 feet from treatment units. Based upon annual surveys conducted from 2013 through 2018, these are the only lakes/ponds in the analysis area known to support pond turtle populations. However, some other habitats (including creeks such as Hayfork Creek) in or near the project area may be suitable for this species.

Direct and Indirect Effects

Project activities may cause disturbance to individual western pond turtles using suitable riparian habitats in or near treatment areas, and individual turtles may move away from treatment areas temporarily during project implementation due to the presence of humans and equipment. The LOP incorporated into the project design to avoid disturbance to NSO during their breeding season will greatly decrease potential direct effects to adult and young western pond turtles as they travel to or from nesting areas. The potential for habitat alteration/impacts is very limited. Waterways are within riparian reserves which are subject to extensive riparian resource protection measures (RPMs). These RPMs will greatly reduce potential effects to this species and aquatic habitat (Appendix 1). As a result, while intermittent disturbance may cause some shifting of behavior patterns, it is unlikely to be sufficiently adverse to lead to disturbances in breeding behavior and success for this species. In addition, no water will be drafted from Hell to Find Lake or Boy Scout Pond, where turtles are known to occur.

In summary, potential effects to western pond turtles are limited and the extensive resource protection measures for riparian zones will further reduce potential effects to this species.

Determination

It is my determination that the proposed action may affect individual western pond turtles, but potential effects to the population demography of this species are limited and insignificant, and will not cause a trend toward listing.

Northern red-legged frog (*Rana aurora aurora*)

Species Account

Northern red-legged frogs inhabit perennial and, less often, intermittent watercourses in northern California north to British Columbia. These watercourses are typically bordered by dense growth of herbaceous or shrub species (Jennings and Hayes 1994, USDI Fish and Wildlife Service 2002).

The proposed activities are outside the known range of northern red-legged frogs. This species is largely restricted to wet coastal climates. Their elevation range extends from sea level to 3,800 ft. (Jennings and Hayes 1994). Wildlife databases have no confirmed records of this species on the Shasta-Trinity National Forest. The project is outside the known range of this species and they are not expected to occur.

Determination

There will be no direct or indirect effects to northern red-legged frogs. Therefore, it is my determination that the proposed action will have no effect on this species.

Foothill yellow-legged frog (*Rana boylei*)

Species Account

Foothill yellow-legged frogs are found in or near permanent rocky streams in a variety of habitats, including ponderosa pine, mixed conifer, and mixed chaparral. They are highly aquatic,

spending most or all of their life in or near streams. They require shallow, flowing water, and display an apparent preference for small to moderate-sized streams with at least some cobble-sized substrate (Jennings and Hayes 1994). They breed in shallow, slow flowing water with partial shading. Insects are likely the primary food source for adults. Adult foothill yellow-legged frogs are often seen breeding in pools on the main stem of the Trinity River in spring and moving to basking and foraging sites in the tributaries in the summer (Wheeler *et al.* 2014, Jennings and Hayes 1994). They are also known to occur in the South Fork Trinity River, Hayfork Creek and other tributaries. Home ranges are typically very small, but movements of up to 165 ft. may occur during high water conditions (California Department of Fish and Game 2005). Wildlife databases show no observations of foothill yellow-legged frogs in treatment areas. The nearest observation is approximately 250 feet from treatment units.

Direct and Indirect Effects

Project activities may cause disturbance to individual foothill yellow-legged frogs within or near treatment areas, and individual frogs may move away from treatment areas temporarily during project implementation due to the presence of humans and equipment. The LOP incorporated into the project design to avoid disturbance to NSO during their breeding season will greatly decrease potential direct effects to foothill yellow-legged frogs during their breeding season. The potential for habitat alteration/impacts is very limited. Waterways are within riparian reserves which are subject to extensive riparian resource protection measures (RPMs). These RPMs will greatly reduce potential effects to this species and aquatic habitat (Appendix 1). As a result, while intermittent disturbance may cause some shifting of behavior patterns, it is unlikely to be sufficiently adverse to lead to disturbances in breeding behavior and success for this species.

In summary, potential effects to foothill yellow-legged frogs are limited and the extensive resource protection measures for riparian zones will further reduce potential effects to this species.

Determination

It is my determination that the proposed action may affect individual foothill yellow-legged frogs, but potential effects to the population demography of this species are very limited and insignificant, and will not cause a trend toward listing.

Cascades frog (*Rana cascadae*)

Species Account

Cascades frogs inhabit high-elevation ponds, lakes, and streams within open coniferous forests from Washington to northern California. They can survive in ephemeral water bodies where at least some substrate remains saturated. Open, shallow water that remains unshaded during the hours of strong sunlight provide egg-laying sites. Cascades frogs hibernate in muddy bottoms during winter (Pope *et al.* 2014, Briggs 1987, Jennings and Hayes 1994). Wildlife databases show no observations of Cascades frogs in or near the project area. The nearest recorded observation was approximately 33 miles to the north in the Trinity Alps Wilderness.

This project is outside the known and expected range of this species. Annual surveys at ponds/lakes within the Action Area, including Hell to Find Lake and Boy Scout Pond, were conducted from 2013 through 2018. No Cascades frogs were observed.

Determination

There will be no direct or indirect effects to Cascades frogs. Therefore, it is my determination that the proposed action will have no effect on this species.

Southern torrent salamander (*Rhyacotriton variegatus*)

Species Account

Southern torrent salamanders occur in aquatic habitats in conifer forests of the Coast Range from Mendocino County, California to northwestern Oregon. They occur in springs, seeps, small streams, and margins of larger streams, where they avoid open water and seek the cover of moss, rocks, and organic debris in shallow, cold water (Welsh and Lind 1996, Jennings and Hayes 1994). They occur within a relatively narrow range of physical and microclimatic conditions. They are associated with cold, clear headwater to low-order streams with loose rocky substrates (low sedimentation) in humid forest habitats with large conifers, abundant moss, and generally greater than 80% canopy closure. Adults eat amphipods, springtails, and insect larvae (Jennings and Hayes 1994). The southern torrent salamander depends upon streamside conditions (microclimate and habitat structure) that in northwestern California are typically best created, stabilized, and maintained within late-successional forests (Welsh and Lind 1996, Jennings and Hayes 1994).

Southern torrent salamanders are typically associated with wet coastal areas, and the project area is approximately 75 miles from the Pacific Coast. There are no observations in the NRIS database on the entire STNF. The nearest observation in CNDDDB is approximately 12 miles to the west, however it is from 1967 and NRIS is typically the more reliable database. The project area is outside the current known range of this species.

Determination

There will be no direct or indirect effects to southern torrent salamanders. It is my determination that the proposed action will have no effect on this species.

Western bumble bee (*Bombus occidentalis*)

Species Account

Western bumble bees are generalist foragers on pollen and nectar from a diverse array of plant species. They are commonly found in riparian habitats, meadows, and recently disturbed areas. Nests are often in abandoned rodent burrows, and less frequently in abandoned bird nests or open grassy areas (Evans *et al.* 2008, Koch *et al.* 2012, Xerces Society 2013). In studies in the Sierra Nevada, abundance of these bees was influenced positively by the presence and proportion of meadows in surrounding habitat, in addition to meadow wetness (Hatfield and LeBuhn 2007).

This species inhabits the western United States from the Great Plains to the Pacific Coast and from Alaska to Southern California. Populations in west coast states have declined dramatically since the 1990's. The most likely cause of this decline is the spread of pests and diseases from the commercial bee industry (Evans *et al.* 2008). Other threats include habitat alteration and removal in the form of agricultural intensification, livestock grazing, urban development, and landscape fragmentation, which may reduce pollen and nectar sources and affect potential nest sites. Use of

broad-spectrum herbicides may also reduce pollen and nectar sources. Additional reported threats include invasive species, use of insecticides, and climate change. Fire suppression may result in conversion of open meadows to forested habitats, reducing availability of meadow nest sites for this species (Evans *et al.* 2008, Koch *et al.* 2012, Xerces Society 2013).

Accounts of foraging ranges for bumblebees in the scientific literature vary widely (Greenleaf *et al.* 2007). The analysis area for this report consists of all lands within 1.3 miles of proposed treatments. This bounding is appropriate because it is likely to encompass the typical foraging range for this species, based on data in the literature cited above. According to wildlife databases, the nearest observation is approximately 9 miles to the west; however it is from 1973. There are some open areas in the forest lands in and near project units, and some of these areas may support habitats suitable for this species.

Direct and Indirect Effects

If western bumble bees do use the project area, project activities may cause disturbance to individual bees near treatment areas, and individual bees may move away from treatment areas temporarily during project implementation due to the presence of humans and equipment. The LOP incorporated into the project design to avoid disturbance to NSO during their breeding season will greatly decrease potential direct effects to western bumble bees during their breeding season. The potential for habitat alteration/impacts is very limited. Riparian areas/reserves are subject to extensive riparian resource protection measures (RPMs). These RPMs will greatly reduce potential effects to this species and riparian and meadow habitat (Appendix 1). As a result, while intermittent disturbance may cause some shifting of behavior patterns, it is unlikely to be sufficiently adverse to lead to disturbances in breeding behavior and success for this species. Use of insecticides is not proposed, so there will not be any effects to this species from insecticide use.

The proposed treatments will not result in a significant or long-term reduction in food availability to this species for the following reasons:

- This species is a generalist forager, utilizing a wide variety of flowering species as food sources.
- Treatments are likely to have a very limited effect on flowering plants.
- This project does not include use of herbicides, so there will be no effects to flowering plants from herbicide use.

In summary, potential effects to western bumblebees are limited and the extensive resource protection measures for riparian zones will further reduce potential effects to this species.

Determination

It is my determination that the proposed action may affect individual western bumble bees, but potential effects to the population demography of this species are very limited and insignificant, and will not cause a trend toward listing.

Species Not Analyzed in Detail

Species Accounts:

Yellow rails (*Coturnicops noveboracensis*) are secretive birds inhabiting marshes, especially large marshes. They breed primarily in eastern Canada and north-central United States and winter primarily in the southeastern United States (Leston and Bookhout 2015). Their known range includes portions of southwest Oregon and northeastern and coastal California. The project area is well outside the known range of this species (Southwell 2002, Shuford and Garaldi 2008).

Shasta salamanders (*Hydromantes shastae*) inhabit moist rocky areas such as limestone outcrops. Their known distribution is limited to Shasta County, primarily near Shasta Lake. The project area is outside the known range of this species.

Pressley (Big Bar) Hesperian snails inhabit conifer and/or hardwood forest habitat in permanently damp areas within 200 meters of seeps, springs and stable streams (USDI Bureau of Land Management 1999, Roth 1985). The nearest recorded occurrence is 14 miles northwest of the project area, and the treatment areas are outside the known range of the species.

California floaters (*Anodonta californiensis*) are aquatic mollusks associated with lakes and slow rivers. Their distribution on the Forest is restricted to the Fall and Pit River systems in Shasta County (Furnish 2007). The project area is outside the known range of this species.

Black juga snails (*Juga nigrina*) are aquatic mollusks inhabiting perennial streams. Their distribution is restricted to tributaries of the Sacramento River system (California Department of Fish and Game 1981). The project area is outside the known range of this species.

Scalloped juga snails (*Juga [Calibasis] occata*) are aquatic mollusks associated with large river systems. Their known distribution on the Forest is restricted to the lower Pit River (Furnish 2007, California Department of Fish and Game 1981). The project area is outside the known range of this species.

Kneecap lanx limpets (*Lanx patelloides*) are aquatic mollusks associated with large river systems. Their known distribution on the Forest is restricted to the Sacramento River and its large tributaries (California Department of Fish and Game 1981). The project area is outside the known range of this species.

Montane peaclams (*Pisidium ultramontanum*) are aquatic mollusks associated with sand-gravel substrates. There are historical records of this species from the Pit River system, but there are no known extant populations on the Forest (Furnish 2007, Duncan 2008). The project area is outside the known range of this species.

Nugget pebblesnails (*Fluminicola seminalis*) are aquatic mollusks typically associated with large streams that have gravel-cobble substrate and clear, flowing water. Their distribution is limited to the area around Lake Shasta, California (Furnish 2007, USDA Forest Service and USDI Bureau of Land Management 1999). The project area is outside the known range of this species.

Shasta sideband snails (*Monadenia troglodytes troglodytes*) and Wintu sideband snails (*Monadenia troglodytes wintu*) are associated with limestone areas including caves and talus slopes. Their distribution on the Forest is limited to the near Shasta Lake, California (USDI Bureau of Land Management 1999). The project area is outside the known range of this species.

Shasta chaparral snails (*Trilobopsis roperi*) are associated primarily with rockslides. Their distribution on the Forest is limited to the area near Shasta Lake, California (USDI Bureau of Land Management 1999). The project area is outside the known range of this species.

Tehama chaparral snails (*Trilobopsis tehamana*) are associated with rocky talus areas. There are no observations on this Forest. The project area is outside the known range of this species.

Shasta hesperian snails (*Vespericola shasta*) inhabit moist bottomlands and caves around Shasta Lake (USDI Bureau of Land Management 1999) as well as other limited areas in Shasta County. The project area is outside the known range of this species.

Direct and Indirect Effects

There will be no direct or indirect effects to these species.

Determination

The project area lies outside the known range of all of these species. Based on this factor, it is my determination that the proposed action will have no effect on any of these species.

COMPLIANCE WITH LAW, REGULATION, POLICY, AND THE FOREST PLAN

The Shasta-Trinity National Forest Land and Resource Management Plan (Forest Plan) provides protection to sensitive species in the form of management goals to maintain or increase existing viable populations of sensitive species (Forest Plan pages 3-26, 4-5). It also includes Standards and Guidelines, management direction pertaining to individual species of wildlife, and specific management direction for each Management Area on the Forest.

Forest-wide management direction for sensitive species (Forest Plan, pp. 4-5 and 4-30) includes the following:

- Manage habitat for sensitive plants and animals in a manner that will prevent any species from becoming a candidate for threatened and endangered status.
- Survey and evaluate habitat for [threatened, endangered and] sensitive species at the project level in coordination with FWS.³
- Maintain and/or enhance *habitat* for [threatened, endangered and] sensitive species consistent with individual species recovery plans.

Additional Forest Plan management direction for specific species is disclosed in the individual species analysis sections of this BE.

The proposed action is in compliance with all laws, regulations, and policies pertinent to Forest Service Sensitive wildlife species, and no amendments to the Forest Plan were necessary to fulfill these requirements.

³ Threatened and Endangered species are assessed in the project-level Biological Assessment. The FWS does not have regulatory jurisdiction over Forest Service sensitive species and there are no current recovery plans for sensitive species that would be affected by this project.

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APPENDIX 1. RESOURCE PROTECTION MEASURES⁴

Northern spotted owl (analyzed in project wildlife Biological Assessment)

For northern spo

or unsurveyed. The LOP will be February 1 through September 15 for all activities directly manipulating nesting/roosting or foraging habitat that is occupied or unsurveyed. The only project units within nesting/roosting and foraging habitat that will need this longer LOP are the prescribed fire units outside of plantations. See the project units list located in the Decision Memo for which units will need LOPs. Surveys to protocol can be used to generate new breeding activity results. If protocol-level surveys indicate no nesting activity within 0.25 miles of proposed activities at the time of implementation or by mutual agreement with the FWS, these LOPs may be lifted.

Northern goshawk

For northern goshawks (*Accipiter gentilis*), a limited operating period (LOP) will be imposed from February 1 to August 15 within 0.5 miles of all known goshawk nest sites. This LOP will apply to all activities causing loud and continuous noise disturbance or smoke that will potentially disturb this species during its breeding season. See the project units list located in the Decision Memo for which units will have LOPs. Surveys to protocol can be used to generate new breeding activity results. If subsequent protocol-compliant surveys show no nesting activity within 0.5 miles of proposed activities at the time of implementation, LOPs may be lifted (as appropriate).

Fisher

For fisher (*Pekania pennanti*), if an active den site is found within a project unit or within 0.25 miles of a project unit, appropriate measures, such as seasonal restrictions, will be applied in cooperation with USFWS. The northern spotted owl LOP described above would also protect fisher during the denning season.

Bats

No caves are known to exist immediately adjacent to proposed activities. If during project layout or implementation caves are found in units or within 250 feet of unit boundaries, the Forest Earth Scientist would be consulted and a buffer flagged on the ground identifying an equipment exclusion zone, and/or modification of the prescription in the vicinity if needed. No project activities, including harvest activities, will take place within 250 feet from caves, mines and mine adits to protect known or potential Townsend's big-eared bat (*Corynorhinus townsendii*) roost sites.

Other

- Retain any existing legacy trees and existing snags greater than 15 inches DBH unless the legacy tree/snag poses a safety hazard for that specific site or the number of snags present on the site exceeds fuel loading recommendations, in which case the largest snags would be retained while meeting the recommended retention levels per the LRMP for the specific land allocation. Any legacy trees or snags greater than 15 inches felled for safety reasons would be left on site as logs.
- Coarse wood (logs greater than 20 inches diameter and 10 feet long) that is already on the ground will be retained where it will not cause a safety concern for implementation, and protected from disturbance to the greatest extent possible during mechanical treatment activities and prescribed burning. Within nesting/roosting and foraging habitat, large logs

⁴ See Project Decision Memo for full list of Resource Protection Measures, Project Design Features, and Best Management Practices.

will be maintained as feasible, with an average of 6-8 logs per acre (at least 20 inches in diameter and 10 feet long) retained with an average of 10-20 tons/acre of fuel remaining, for protection of habitat and soil fertility.

- Snags and logs with deformities such as cat faces, broken or forked tops, hollows or cavities will be prioritized for retention.
- Protect and retain dominant and co-dominant class hardwoods (all treatments) along with healthy intermediate class hardwoods (Riparian Reserves only), as possible where they do not interfere with or cause a hazard to implementation.
- Implement all Applicable Best Management Practices (BMPs).

Riparian Reserve Areas

1. Figure 2 provides a graphic definition of Riparian Reserve and equipment exclusion zones.

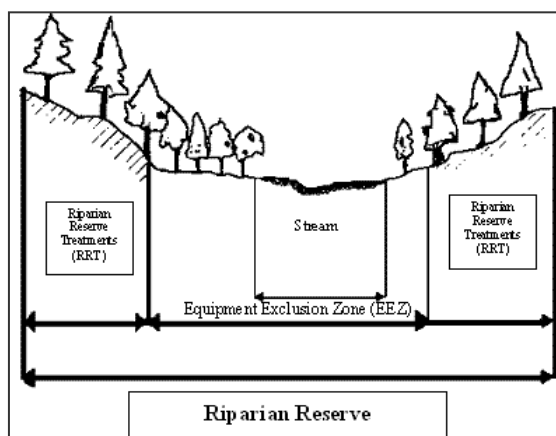


Figure 2. Graphic depiction of Riparian Reserves

2. Table 3 below provides the minimum riparian reserve boundary widths by category of stream and/or waterbody (Forest Plan 4-53, 4-54). When calculating Riparian Reserve distances, the site-potential tree height is based on the tallest dominant 200 year old or older trees locally near the stream in question (outside of treatment areas).

Table 2. Minimum Riparian Reserve Boundary Widths, by Stream or Waterbody Category.

Stream and/or Waterbody Category	Extent of Riparian Reserve Width	Equipment Exclusion Zones (EEZ)
Seasonally flowing or intermittent	A distance equal to the height of 1	Within 50 feet of the stream,

streams or wetlands < 1 acre or unstable or potentially unstable areas	site potential tree on each side of the channel, or 100 feet on each side of the channel, wetland or unstable area (200 feet total), whichever is greatest.	riparian zone, delineated unstable area, or break in slope for inner gorge.
Fish-bearing perennial streams and lakes or natural ponds	A distance equal to the height of 2 site potential trees on each side of the channel or edge of the lake or pond, or 300 feet on each side of the channel or edge of the lake or pond (600 feet total), whichever is greatest.	Within 150 feet of the stream
Perennial non-fish-bearing streams and wetlands > 1 acre	A distance equal to the height of 1 site potential tree on each side of the channel or edge of the wetland, or 150 feet on either side of the channel or edge of the wetland (300 feet total), whichever is greatest.	Within 150 feet of the stream

3. Where the inner gorge extends beyond 100, 150, or 300 feet for seasonal, nonfish, and fish-bearing streams, respectively, then the Riparian Reserve is the entire inner gorge area. A minimum 50 foot equipment exclusion zone will be flagged along the outer edge of the inner gorge. It may be wider or narrower if deemed necessary during field evaluation by the earth scientist, fish biologist or designee.
4. Mechanical equipment will not operate within the equipment exclusion zones. Mechanical equipment will not operate beyond the break in slope of any inner gorge. All Equipment Exclusion Zones (EEZs) will be flagged and/or signed within proposed treatment units and identified as "equipment exclusion" on project maps. Treatments will have limited ground disturbance in the EEZ and will not disturb riparian plant species such as big leaf maple (*Acer macrophyllum*) and alder (*Alnus* spp.).
5. Hand piling and pile burning will not occur within the EEZs. However, fire may be allowed to back into these areas, providing the spread will be controllable.
6. Treatments in unstable areas will be limited to hand or cable treatments.
7. Wet meadows and unstable areas are included in the Riparian Reserve designation.
8. Any trees >12 inches in diameter felled within the inner gorge or perennial stream channels will generally be left in place, unless field review by a fish biologist or earth scientist reveals a site specific issue with doing that, such as excessive fuel loading.
9. Riparian Reserves that are unmapped will be identified and protected, prior to and/or during implementation, in accordance with appropriate protection measures (see Table 3 above). Upon field review, if ephemeral streams show no sign of annual scour or deposition (i.e., upland swales) they do not meet the Forest Plan definition of a waterbody requiring buffering by a Riparian Reserve, thus these areas are to be treated based on the management prescription for that area.
10. Effective shade over water in Riparian Reserves will not be reduced by more than 20 percent canopy cover, the 20% reduction in canopy cover will recover within 10 years.
11. Trees that pose a hazard to workers that are felled within Riparian Reserves must be retained on site. An exception is that trees felled in stream channels can be removed for a distance of up to 200 feet upstream of culverts.
12. Any tail holds located within the equipment exclusion zones of the riparian reserves will be felled towards the stream. Riparian reserves may have cables strung through them but will have no timber yarded through them. Any tail hold trees felled outside of the area to be treated will be left onsite where they lay. In NRF habitats, all tail holds will be approved by a

wildlife biologist prior to cutting and cutting of tail hold trees over 24" DBH in NRF habitat will be avoided when feasible.

Water Drafting

1. Water drafting will occur at existing sites with existing access and will be located to minimize adverse effects on stream channel stability, sedimentation and instream flows needed to maintain riparian resources, channel conditions and fish habitat⁵. Water drafting sites that are not within habitat that is accessible to anadromous salmonids will be identified first and will be given priority for use. When needed, water drafting may occur in habitat accessible by anadromous salmonids. In all cases where water drafting occurs within anadromous salmonid habitat⁶, 2001 National Marine Fisheries Service's (NMFS) Water Drafting Specifications⁷ will be adhered to.
2. In addition, when drafting water outside of anadromous salmonid habitat, the following rules apply⁸:
 - a. Allow drafting from fishery streams only where immediate downstream discharge is maintained at 1.5 cubic feet per second (CFS) or greater (and is not greater than 10 percent of the stream flow).
 - b. Allow drafting from ephemeral streams, intermittent streams, wetlands or constructed ponds provided that sufficient water quantity and quality remains to support associated wildlife species and riparian values.
 - c. Never allow drafting to remove more than 75 percent of constructed pond water.

NSO Project Specific Project Recommendations and Design Features

The following recommendations and design features were developed collaboratively with USFWS and were written specifically for the Dubakella Plantations Project. The recommended Project Design Features were developed to minimize underburning effects to northern spotted owls and their suitable habitat to an insignificant and discountable level.

General Information and Recommendations for Underburning Outside of Plantations

- Year-of-Activity Surveys: The Level 1 consultation team will coordinate annually throughout the extent of project implementation to cooperatively determine the survey effort, or PDFs that limit operations, that are needed in order to support the determinations in the Biological Assessment.
- Suitable habitat, as the term is defined and used here, consists of nesting, roosting and foraging habitat.
- "Owlshed," as the term is defined and used here, is an area utilized by NSOs. Its placement is based on habitat, topography and survey data of NSO detections from prior years. It will be used in lieu of traditional cores and home ranges in the South Fork Goods Creek drainage.
- Prescribed fire will be variable within and between stands, will be distributed over a number of years, and will incorporate project design features that seasonally restrict operations during the NSO nesting season, and that limit the proportion of core areas and

⁵ Forest Plan Standard and Guideline, page 4-58 in the Forest Plan

⁶ Refer to hydrology report for drafting locations, refer to fisheries report for anadromous fish effects.

⁷ The 2001 National Marine Fisheries Service's (NMFS) Water Drafting Specification document is located at http://www.westcoast.fisheries.noaa.gov/publications/hydropower/water_drafting_specification_guidelines.pdf.

⁸ Forest Plan Standard and Guideline, page 4-25 in the Forest Plan.

home ranges (or “owlsheds,” if designated) burned in any one year. Burning will be done to create low to moderate fire behavior (flame lengths two to six feet but generally less than four feet) to meet the desired habitat restoration objectives, however flare ups and higher flame lengths and fire intensity may occur where there are higher fuel concentrations of small ladder fuels or down wood.

- Coarse wood (logs greater than 20 inches diameter and 10 feet long) that is already on the ground will be retained where feasible. Within nesting/roosting and foraging habitat, large logs will be maintained as feasible, with an average of 6-8 logs per acre (at least 20 inches in diameter and 10 feet long) retained with an average of 10-20 tons/acre of fuel remaining, for protection of habitat and soil fertility.
- Limited operating periods (LOPs) will be used to avoid direct effects and disturbance to the NSO. From February 1 through July 9, all activities that generate loud and continuous noise and/or smoke will be prohibited within 0.25 miles of nesting/roosting and foraging habitat that is occupied or unsurveyed. In addition, the LOP will be February 1 through September 15 for all activities directly manipulating nesting/roosting or foraging habitat that is occupied or unsurveyed. If protocol-level surveys indicate no nesting activity within 0.25 miles of proposed activities at the time of implementation or by mutual agreement with the FWS, these LOPs may be lifted.

Project Design Features for Underburning and NSOs

1. Surveys (consisting of stand searches, spot checks, or other agreed-to survey methods as described in the current NSO survey protocol) may be used to determine if NSOs are occupying a stand or nesting each season that underburning may be completed. The activity center (core center) location will be delineated based on these annual results. If surveys cannot be completed, occupancy and nesting will be assumed and the activity center will be placed at the last known activity center or nest site location.
2. Regardless of the occurrence (or lack) of surveys the year of implementation or the results of surveys, the following will apply to all nesting/roosting habitat within a core (when utilizing traditional cores and home ranges) or an owlshed:
 - a. Utilize firing techniques that maintain suitable habitat functionality immediately post-burn.
 - b. If necessary to maintain the above-referenced habitat function/elements, manual treatments such as cutting brush and moving large logs out from around large snags and previous nest trees, pruning, hand thinning or hand piling of small diameter fuels, or light thinning of regeneration pockets may be completed prior to underburning. The target treatment area would be around known/previous nest trees and other large trees/snags in the area that could be valuable nest trees (not all NR habitat). However, these manual treatments when combined with underburning will still maintain habitat functionality.
 - c. A burn monitoring plan will be created, and adapted as needed, to insure habitat functionality is maintained, in collaboration with the Yreka FWS.
 - d. During underburning, FWS biologists will be invited to be onsite with Forest Service biologists or other staff to monitor burn implementation, and to cooperatively develop recommendations for burn plan modifications, if needed, to maintain habitat functionality.
3. No more than 50-60 percent of the suitable habitat within a 0.5-mile core area or a 1.3-mile home range area will be burned in any one year, with the following exception:
4. Within the South Fork Goods Creek “owlshed,” no more than 50-60 percent of the suitable habitat within the northern portion of the “owlshed” will be burned in any one year. This PDF will not apply to the southern portion of the “owlshed” (it can all be burned in one year).

5. Crown closure of stands will not be reduced below 60-70% in nesting/roosting habitat or below 40% in foraging habitat.
6. When burning in spring, manage smoke to reduce the effects to adjacent stands of suitable habitat so it dissipates or lifts within 24 hours. If spring burning is conducted outside of the 0.25-mile disturbance buffer but within 0.5 mile uphill of a known NSO activity center or nest, or within 0.25 to 0.5 mile of unsurveyed suitable habitat, smoke will be managed as described above and ignition should be discontinued if heavy, concentrated smoke begins to inundate suitable habitat late in the afternoon.